

CLAIMS

1. A modular system for collecting water from ambient air and dispensing the collected water, the system comprising:
 - 5 a condensor unit for condensing the water from the ambient air and collecting the condensed water, and including at least one condensation surface disposed for contact with the ambient air;
 - a refrigeration system for cooling the condensation surface to, or below, the dew point of the ambient air to effect the condensation of the water from the ambient air onto the condensation surface for collection, the refrigeration system being housed
10 in the condensor unit and including a compressor for compressing a refrigerant vapour and a condensor for condensing the compressed refrigerant vapour into liquid refrigerant; and
 - at least one dispenser unit for being located remotely from the condensor unit for receiving the condensed water from the condensor unit and dispensing the water,
15 wherein the dispenser unit is adapted for storing the water and/or recirculating at least some of the water.
2. A system according to claim 1 wherein the dispenser unit is adapted for recirculating at least some of the water back to the dispenser unit.
3. A system according to claim 1 wherein the dispenser unit is adapted for storing water
20 received from the condensor unit.
4. A system according to claim 3 wherein the dispenser unit comprises a dispenser body and a storage reservoir for storing the water until use.
5. A system according to claim 4 wherein the storage reservoir is removable from the dispenser body and the dispenser body is adapted for passage of the water from the
25 dispenser body into the storage reservoir.
6. A system according to claim 3 wherein the dispenser unit comprises an internal storage compartment for storing the water and a valve operable to release the water from the storage compartment on demand.
7. A system according to claim 5 wherein the dispenser body comprises an internal
30 storage compartment for storing the water and a valve operable to release the water from the storage compartment into the storage reservoir.

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8. A system according to claim 5 or 7 wherein the storage reservoir is provided with a dispenser valve operable for dispensing the water from the storage reservoir.
9. A system according to any one of claims 1 to 8 wherein the condensor is arranged for contact with ambient air flowing from the condensation surface for cooling the condensor.
10. An apparatus according to claim 9 wherein the condensor unit incorporates an airflow device for causing flow of the ambient air through the condensor unit from the condensation surface to the condensor.
11. A system according to claim 9 or 10 wherein the condensor unit further comprises at least one adjustable air intake operable to allow ambient air to flow to the condensor by-passing contact with the condensation surface, such that a flow rate of ambient air flowing into contact with the condensor is adjusted relative to that of ambient air flowing from exterior of the condensation unit into contact with the condensation surface.
12. A system according to any one of claims 1 to 10 further comprising a control system for controlling flow rate of the ambient air from exterior of the dispenser unit into contact with the condensation surface, the control system comprising:
a temperature sensor for indicating temperature of the ambient air flowing from the condensation surface; and
control means for monitoring the temperature indicated by the temperature sensor and adjusting the flow rate of the ambient air flowing into contact with the condensation surface in response to the monitored temperature, to promote condensation of the water from the ambient air onto the condensation surface.
13. A system according to claim 12 further comprising:
a further temperature sensor arranged for monitoring temperature of the refrigerant vapour in the condensor;
a pressure sensor for measuring pressure within the condensor; and
at least one adjustable air intake operable to allow ambient air to flow to the condensor by-passing contact with the condensation surface, such that a flow rate of ambient air flowing into contact with the condensor is adjusted relative to that of ambient air flowing into contact with the condensation surface;
wherein the control means is adapted for assessing the temperature monitored by the further temperature sensor and the pressure measured by the pressure sensor,

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and operating the adjustable air intake to alter the flow rate of ambient air flowing to the condensor.

14. A system according to any one of claims 1 to 13 wherein the dispenser unit is provided with at least one indicator for providing an indication of a corresponding operational parameter of the dispenser unit.

15. A system according to claim 14 wherein the dispenser unit is provided with a plurality of said indicators, each of the indicators providing an indication of a different operational parameter, respectively.

16. A system according to claim 14 or 15 wherein the operational parameter is selected from the group consisting of availability of water from the condensor unit, low water level in the condensor unit, air or water filter status in the condensor unit, and operational status of the condensor unit.

17. An apparatus according to any one of claims 1 to 16 wherein the condensor unit incorporates a water circulation system comprising:

a holding tank for receiving the condensed water from the condensation surface; and

a pump for pumping the water from the holding tank to the dispenser unit.

18. An apparatus according to claim 17 wherein the water circulation system further comprises at least one ultraviolet light treatment unit for treating the water in the condensor unit with ultraviolet light prior to the water being pumped by the pump from the condensor unit to the dispenser unit.

19. An apparatus according to claim 18 wherein the ultraviolet light treatment unit is arranged in a flow path of the condensed water in the dispenser unit, and the ultraviolet light treatment unit comprises:

an ultraviolet light source for providing the ultraviolet light;

a hollow member defining a treatment chamber with an inlet for entry of the water into the treatment chamber and an outlet for passage of the water from the treatment chamber, and which is transparent to the ultraviolet light; and

an inducer element arranged for inducing spiral flow of the water along the treatment chamber from the inlet to the outlet;

wherein the ultraviolet light source is arranged exterior of the treatment

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chamber for irradiating the water with the ultraviolet light as the water flows along the treatment chamber.

20. An apparatus according to claim 19 wherein the inducer element comprises a stationary spiral element arranged within the treatment chamber in a fixed position for inducing the spiral flow in the water along the treatment chamber as the water flows past the spiral element.
21. A dispenser unit for dispensing water received from a stand alone water collection unit, the dispenser unit comprising at least one valve for dispensing the water and being adapted for storing the water until use and/or recirculating at least some of the water to the water supply unit.
22. A dispenser unit according to claim 21 wherein the dispenser unit is adapted for recirculating at least some of the water to the water supply unit.
23. A dispenser unit according to claim 21 wherein the dispenser unit is adapted for storing water received from the water supply unit.
24. A dispenser unit according to claim 23 wherein the dispenser unit comprises a dispenser body and a storage reservoir for storing the water.
25. A dispenser unit according to claim 24 wherein the storage reservoir is removable from the dispenser body and the dispenser body is adapted for passage of the water from the dispenser body into the storage reservoir.
26. A dispenser unit according to claim 25 wherein the dispenser body comprises an internal storage compartment for storing the water and a valve operable to release the water from the storage compartment into the storage reservoir.
27. A dispenser unit according to claim 25 or 26 wherein the storage reservoir is provided with a dispenser valve operable for dispensing the water from the storage reservoir.
28. A dispenser unit according to any one of claims 21 to 27 wherein the dispenser unit is provided with at least one indicator for providing an indication of a corresponding operational parameter of the water collection unit.
29. A dispenser unit according to claim 28 wherein the dispenser unit is provided with a plurality of said indicators, each of the indicators providing an indication of a different operational parameter, respectively.

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30. A dispenser unit according to claim 30 wherein the operational parameter is selected from the group consisting of availability of water from the water supply unit, low water level in the water supply unit, air or water filter status in the water supply unit, and operational status of the water supply unit.

5 31. A water collection apparatus for collecting water from ambient air, the apparatus comprising:

at least one condensation surface disposed for contact with the ambient air;

at least one adjustable air intake; and

10 a refrigeration system for cooling the condensation surface to, or below, the dew point of the ambient air to effect the condensation of the water from the ambient air onto the condensation surface for collection, the refrigeration system including a compressor for compressing a refrigerant vapour and a condensor for condensing the compressed refrigerant into liquid refrigerant;

15 wherein the condensor is arranged for contact with ambient air flowing from the condensation surface, and the air intake is operable to allow ambient air to flow to the condensor by-passing contact with the condensation surface such that a flowrate of ambient air flowing into contact with the condensor is adjusted relative to that of ambient air flowing from exterior of the condensor into contact with the condensation surface.

20 32. An apparatus according to claim 31 further comprising a control system for controlling the flow rate of the ambient air from exterior of the dispenser unit into contact with the condensation surface, the control system comprising:

a temperature sensor for indicating temperature of the ambient air flowing from the condensation surface; and

25 control means for monitoring the temperature indicated by the temperature sensor and adjusting the flow rate of the ambient air flowing into contact with the condensation surface in response to the monitored temperature, to promote condensation of the water from the ambient air onto the condensation surface.

30 33. An apparatus according to claim 32 further comprising:

a further temperature sensor arranged for monitoring temperature of the refrigerant vapour in the condensor; and

a pressure sensor for measuring pressure within the condensor;

wherein the control means is adapted for assessing the temperature monitored by the further temperature sensor and the pressure measured by the pressure sensor,

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and operating the adjustable air intake to alter the temperature monitored by the further temperature sensor and the pressure within the condensor.

34. An apparatus according to any one of claims 31 to 33 further comprising an air flow device for causing flow of the ambient air from the condensation surface to the condensor.

35. An apparatus according to any one of claims 31 to 34 further comprising:
a holding tank for receiving the condensed water from the condensation surface; and
a pump for pumping the water from the holding tank to a remotely located dispenser unit.

36. An apparatus according to claim 35 adapted for return of at least some of the water from the dispenser unit and recirculating the water back to the dispenser unit.

37. An apparatus according to claim 36 further comprising an ultraviolet light treatment unit for treating the water with ultraviolet light each time the water is pumped to the dispenser unit.

38. An apparatus according to any one of claims 31 to 36 further comprising at least one ultraviolet light treatment unit for treating the condensed water, the ultraviolet light treatment unit comprising:

an ultraviolet light source for providing the ultraviolet light;

a hollow member defining a treatment chamber with an inlet for entry of the water into the treatment chamber and an outlet for passage of the water from the treatment chamber, and which is transparent to the ultraviolet light; and

an inducer element arranged for inducing spiral flow of the water along the treatment chamber from the inlet to the outlet;

wherein the ultraviolet light source is arranged exterior of the treatment chamber for irradiating the water with the ultraviolet light as the water flows along the treatment chamber.

39. An apparatus according to claim 38 wherein the inducer element comprises a stationary spiral element arranged within the treatment chamber in a fixed position for inducing the spiral flow in the water along the treatment chamber as the water flows past the spiral element.

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40. An ultraviolet light treatment device for treating water with ultraviolet light, the apparatus comprising:

an ultraviolet light source for providing the ultraviolet light;

a hollow member defining a treatment chamber with an inlet for entry of the water into the treatment chamber and an outlet for passage of the water from the treatment chamber, and which is transparent to the ultraviolet light; and

an inducer element arranged for inducing spiral flow of the water along the treatment chamber;

wherein the ultraviolet light source is arranged exterior of the treatment chamber for irradiating the water with the ultraviolet light as the water flows along the treatment chamber.

41. A device according to claim 40 wherein the inducer element comprises a stationary spiral element arranged within the treatment chamber in a fixed position for inducing the spiral flow in the water along the treatment chamber as the water flows past the spiral element.

42. A device according to claim 41 wherein the inducer element comprises a plate member twisted into a spiral form with a longitudinal axis directed along the treatment chamber.

43. A device according to claim 42 wherein the ultraviolet light source and the hollow member are arranged alongside one another.

44. A device according to any one of claims 40 to 43 further comprising a reflector arranged rearwardly of the ultraviolet light source for reflecting the ultraviolet light forward into the treatment chamber.